WEATHER IN THE UNITED STATES

THE WEATHER ELEMENTS

By P. C. DAY

GENERAL CONDITIONS

The important feature of the weather during April, 1928, was the persistent cold that existed almost continuously after the first week over nearly all districts. This was in marked contrast with conditions during the three preceding months, which were mainly unusually warm.

PRESSURE AND WINDS

Changes in barometric pressure were mainly only moderate, but their general trend was productive of cool weather which, continuing almost without break until near the end, delayed the normal temperature advance, and at the close the season was generally a week to 10 days or even more late.

The cyclones, while productive of much precipitation in the lower Mississippi Valley and to eastward over the Gulf and Atlantic Coast States, were generally without importance in the early stages of their development.

The first important cyclone attended by heavy and widespread precipitation developed over the Southwest, reaching the southern plains on the morning of the 5th, by which time considerable precepitation had occurred as far east as the Mississippi Valley and upper Lake region. This storm advanced slowly toward the Great Lakes from the 6th to 8th, causing heavy rains in the central Gulf States and northward to the Ohio Valley and some heavy snow in portions of Iowa and near-by areas, causing blockaded highways and much loss to overhead wires from the clinging snow. Thousands of telephones were put out of operation and communication between some points was possible only by radio.

About the 9th a weak cyclone developed over the west Gulf and during the 10th some heavy rains occurred in the Gulf and South Atlantic States, continuing over much of the same territory during the following day and gradually extending to New England by the 12th, but with diminishing precipitation.

At the morning observation of the 13th two barometric depressions had extended into the Plains region, though but little important precipitation had occurred up to that time. During the following 24 hours the two storms appear to have united and moved to the Great Lakes with increased intensity, and the precipitation area had increased greatly, with high winds on the lower Lakes, the velocity at Buffalo reaching the highest speed ever observed at that place in April and, being from the southwest, drove vast quantities of ice into the eastern end of the lake, raising the general level of the lake in that vicinity by 4 feet or more. Considerable snow occurred in the upper Mississippi Valley and to eastward over the upper Lakes, and heavy rains occurred locally in the west Gulf States and Ohio Valley. This storm moved to the northward of New England by the morning of the 15th, and the rain area extended to the Atlantic coast with heavy local falls in the Southeastern States.

By the 17th stormy conditions had set in over the middle and northern plains, but the rain area was restricted to rather narrow limits in the Lake region, and the storm largely dissipated as it moved eastward toward northern New England.

A storm of small proportions central in the lower Ohio Valley on the morning of the 21st gave some heavy rains over that area and, being reinforced by a secondary depression from the Southwest, developed into an extensive rain area covering a wide territory from the central and southern plains northeastward to the lower Lakes and central New England. The barometric depression was again reinforced over the Southeastern States and precipitation continued on the 24th from the Gulf States to New England, the falls being locally heavy over much of the area, the rain turning to snow in New England and to sleet in a few near-by localities.

One of the most important cyclones of the month originated in the middle plateau about the 24th, but caused little precipitation until the 27th, when the center had reached the middle Gulf States. This storm moved rapidly to the Chesapeake Bay region by the morning of the 28th, when heavy rains were falling along nearly the entire Atlantic coast, and heavy snows had occurred during the preceding night over much of the Allegheny Mountain region, reaching depths up to 18 or 20 inches, the heaviest of record for April in some localities, causing much damage by its heavy, frozen condition to overhead wires, trees, etc. The storm diminished rapidly in strength as it moved to New England during the following day.

The anticyclones were not particularly vigorous and exerted no great influence on the weather save for short periods and moderate areas.

The daily movements of the cyclones and anticyclones are shown on Charts II and III and the monthly distribution of the average pressure and the variations from normal, etc., are shown on Chart VI, and on the insets of Charts II and III.

The winds were not strong over extensive areas, but local storms, doing more or less damage, occurred on numerous dates; some lives were lost and important local property damage resulted from tornadoes which occurred during the month, the usual details of which appear in the table at the end of this section.

TEMPERATURE

Unlike the preceding months of the year, April was unusually cold for the mid-spring month, and while few minimum temperatures were below those recorded in April of previous years, still many sections reported frequent killing frosts and temperatures the lowest of record for so late in the month, and moderate cold was nearly continuous except for the first and last few days. This condition is well illustrated by the remarks of a cooperative observer who summarized the month as having started well and ended well, but having a miserable average.

Generally speaking the cold was not sufficiently severe at any time to cause widespread damage to vegetation, though this was due largely to its dormant condition over areas where the most severe cold occurred.

The first few days were warm and springlike over much of the country, but particularly so in the central valleys on the 2d and further east on the 3d to 5th.

Following this warm spell, colder weather set in over the western sections and the week ending April 10 averaged much colder than normal over all districts from the Mississippi River westward, save for a narrow strip along the immediate Pacific coast where the weekly average was slightly above normal, and it was likewise warmer than average over the eastern third, the excess being quite large in the lower Lake region.

The week ending the 17th continued cold over the interior valleys and to the westward save for the Pacific Coast States, where it continued moderately warm as during the preceding week. Over the eastern districts this week was mostly cold throughout.

With slight variations, the week ending the 24th continued cold throughout, the negative departures being large over all northern districts from the Rocky Mountains eastward, and the weekly averages were also below normal in all other districts, save for small areas in the South and Southeast and at a few points along the coast of southern California.

The last week brought some relief from the long continued period of cold, particularly in the western half where the weekly averages were mainly moderately above normal, and the warmest weather of the month was reported from about the 25th to 30th. Over the eastern half, however, the week as a whole continued cold, some sections of the Southeastern States having minimum temperatures the lowest of record so late in the month.

For the month as a whole the average temperature was below normal in all districts save at a few points on the Atlantic coast, over extreme southern Florida, in portions of Arizona, and locally along the immediate Pacific coast. The monthly means were the lowest of record for April at a few points near the Gulf coast.

The highest temperatures occured mainly from the 2d to 5th over the Great Plains and to eastward, save at a few points in the Gulf States, where they were reported about the 20th to 22d, while from the Rocky Mountains westward they were observed mainly during the last few days.

The lowest temperatures were observed from about the 1st to 3d over the Northeastern States, from the 6th to 9th in the districts from the Rocky Mountains westward, and over the remaining districts from about the 15th to 20th, save a few sections along the South Atlantic coast had their lowest temperatures about the 28th.

PRECIPITATION

The month brought abundant precipitation over nearly all districts from central Kansas, central Oklahoma, and northeastern Texas eastward to the Atlantic coast and over most of the upper Ohio Valley, Middle Atlantic States, and New England.

In portions of the Southeastern States the monthly amounts were the greatest of record for April, and local excessive falls caused more or less flood conditions in parts of Florida and other near-by States. There were local slight excesses in portions of the upper Lake region and near-by Canadian sections, and there were mainly moderate excesses along the Pacific coast from central California to Washington.

In other districts the precipitation was generally less than usually occurs in April, with the least of record for the month occurring locally in Arizona, western Nebraska, and southern Florida. In the southern portions of the latter State an unusual drought has existed for a number of months; in fact at Miami the deficiency dates from October, 1926, since which time to the end of April the total fall has been nearly 40 inches less than usually occurs in such a period. This is the greatest deficiency ever known in that locality for a similar period of time.

SNOWFALL

Some snow fell over unusually wide areas for so late in spring, and the amounts were mainly above the normal for the month in the Lake region, portions of the Appalachian Mountains, Iowa and portions of near-by States, and in some of the mountain States of the West, though in many of these States the fall of snow was less than usual.

Important snows occurred in the upper Mississippi Valley from the 6th to 8th, particularly in portions of Iowa, where traffic was delayed or blocked and much damage resulted to overhead wires by the breaking of poles, etc., from the weight of the heavy frozen snow.

Unusually late snow occurred over north-central Texas about the 14th, and in the central Appalachian Mountain region on the 27th and 28th, the fall being particularly heavy in the Shenandoah Valley in Virginia, where depths up to nearly 20 inches were reported locally, in most cases the greatest fall ever occurring in April, and in some the greatest fall for a single storm in any month.

The general distribution of the snowfall and the monthly amounts over the different areas are shown on Chart VII.

RELATIVE HUMIDITY

Despite the general cloudy rainy conditions over much of the eastern part of the country, the low temperatures favored low relative humidity and the average was below normal over most districts.

Local values in excess of the normal appeared in the Appalachian Mountains, in portions of the Mississippi Valley, and also in the Plateau and Pacific States, where precipitation was generally less than normal.